Remarks

Claims 1-5 have been canceled and claims 7-17 have been amended.

Rejection under Section 101

Claims 7-17 were rejected "because the claimed invention was not supported by a either a specific and substantial asserted utility or a well established utility." This specific and asserted utility rejection is improper as the Federal Circuit has stated that "[t]o violate [35 U.S.C.] 101 the claimed device must be totally incapable of achieving a useful result." Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1571, 24 USPQ2d 1401, 1412 (Fed. Cir. 1992). In the present matter, it has not been asserted that this particular generator, as disclosed, has immediate large-scale commercial use, or can supply endless perpetual motion energy. Rather, the inventors have asserted a variety of smaller utilities, such as having invented a new style of MHD generator design, with immediate and apparent benefits such as increased safety, and simplified design.

With regards to the Examiner's apparent concern that the entire invention depends on cold fusion for utility, we believe that numerous other aspects of the design were specifically disclosed as having utility for those skilled in the art of MHD generator design. However, we would also like to address the Examiner's arguments based on the September 2002 Nuclear News article. First, we believe that the Examiner's statements imply that bubble and cavitation related fusion is a matter of settled scientific consensus, while the scientific community is quite divided on the issue. After the publication of the September 2002 article in Nuclear News, even the American Nuclear Society has not taken a consistent position on the topic, as can be seen by their November 2006 publication of bubble fusion confirming material in Transactions of the American Nuclear Society.

Rejection under Section 112 – Paragraph 1

Claims **7-17** were rejected "as based on a disclosure that was not enabling". We believe this rejection is improper as the applicable legal standard allows for features that are merely preferred to be excluded from the claims. *In re* Goffe, 542 F.2d 564, 567, 191 USPQ 429, 431 (CCPA 1976). In this application, cold fusion reactions are not critical to the operation of the MHD device disclosed when the whole disclosure is considered. That is, the Inventors disclosed that the amount of energy produced may be greater than that inputted, but made no claims to the ability of the disclosed invention to consistently make electrical power, and there is nothing in the application as filed to imply that the invention has to enable cold fusion as a critical to practicing the other aspects of the invention.

Rejection under Section 112 – Paragraph 2

Claims 7-17 were rejected as "failing to define the invention". The claims have been amended to better conform to U.S. practice, and now more clearly present the subject matter of the invention.

Applicants in Russia desire to traverse the Restriction Requirement, particularly in consideration of the claims as amended. The subject matter of the claims suggests a common search and common issues. Little is saved by separate consideration. The Restriction Requirement was premature in view of the translation provided from Russia, particularly considering the objection in the Office Action under § 112 and § 101. Furthermore, the Office Action had not been received, as explained, and consequently, a new Office Action should be issued, which permits an opportunity for the Patent Office to better focus its comments. The present application is directed to an MHD generator, while the Office Action elaborates on an incidental aspect termed "cold nuclear fusion". Reconsideration is requested.

If any fees are due in connection with the filing of this Amendment, such as fees under 37 C.F.R. §§ 1.16 or 1.17, please charge the fees to our Deposit Account No. 02-4300; Order No. 033808.172.

Respectfully submitted,

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FFC/sbs

METHOD FOR THE PRODUCTION OF ELECTRIC ENERGY AND MHD GENERATOR THEREFOR

BACKGROUND OF THE INVENTION

~~Technical field~~ Field of the Invention

The present invention relates to power engineering, namely, ~~to producing~~ improvements in generation of electrical energy by ~~means of MHD generators~~ magnetohydrodynamics.

~~Background art~~ Description of Related Art

There is a known method of producing energy (WO 90/00526, 1990, in particular thermal energy, by arranging the motion of water in a predetermined direction in a closed circuit. This method uses unique properties of ~~water~~ polar working fluids stipulating a release of energy as a result of hydrogen bonds opening. Besides, a release of ~~electric~~ kinetic energy along with heat one is noted. However, this method does not allow producing electric energy as suitable for use. A similar method (RU 2124681, 1999) ~~with the use not only water but any polar liquid gives justifications~~ explains ~~of~~ the release of additional energy of said liquid, namely ~~at the expense of behavior of the reaction~~ from a combination of cold nuclear fusion and cavitational processes. The additional kinetic energy caused the working fluid to moved at accelerated velocity in the closed circuit. However, ~~Also~~ this method is not intended for producing electric energy.

~~There are a~~ Another previous device and method of producing electric energy (SU 753372, 1980; ~~US 3496781, 1967~~) ~~by~~ utilized a method of arranging the motion of ferromagnetic spheroids in a predetermined direction in a closed channel, when voltage produced at the expense of electromagnetic induction is collected by means of electromagnetic windings. ~~The~~ This device which implements the method contains a hermetically sealed toroidal channel in which there is a conducting medium as ferromagnetic spheroids and electromagnetic system with windings. The said device and method ~~as~~ has the disadvantage of a low efficiency factor, are rather complex and have low reliability.

A type of generator that create useable electrical energy from moving fluids is the magnetohydrodynamic generator (MHD generator). ~~The nearest analogs are a device and~~ This method of producing electric energy (RU 2071163, 1996; RU 95110712, 1997) ~~by~~ utilizes arranging the motion of a conducting medium in a predetermined direction in a closed channel when the produced electric energy is collected by means of electromagnetic windings. Ionized gas is issued as a conducting medium. The device which implements the method, a type of MHD

generator, contains a closed toroidal channel with a body made of non-magnetic material, inside of which there is a dielectric cover and electromagnetic system with windings. The known method and device have a low efficiency factor, are rather complex and have low reliability. Besides, ~~the~~ this method is not ecologically safe.

BREIF SUMMARY OF THE INVENTION

This invention applies a variety of improvements to toroidal MHD generator design. Using a tightly sealed toroidal layout, with a polar operating fluid of a lower dielectric constant than dielectric constant of the coating lining the inside of the hollow, toroidal channel in which the operating fluid circulates.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates an overall view of an embodiment of the MHD generator.

FIG. 2 illustrates a lateral section of the same embodiment of the MHD generator shown in **FIG. 1**.

DETAILED DESCRIPTION OF THE INVENTION

~~Disclosure of the invention~~

The ~~purposes of the proposed engineering solutions~~ advantages of this invention over the existing art include: efficiency upgrading, reliability and ecological safety growth as well as simplification of the MHD generator design.

The above said purposes are achieved as follows.

In ~~the~~ this adaptation of the known MHD method for the production of electric energy by arranging the motion of a conducting medium in a predetermined direction along a closed circuit ~~when~~ where the produced electric energy is collected by means of electromagnetic windings, ~~a~~ novel feature ~~novelty~~ is that a polar liquid is issued as a conducting medium which is ionized at least at the stage of launching and the polar liquid is circulated by means of traveling magnetic field with the help of electromagnetic exciting windings, as this takes place, the motion of the medium is arranged in a hermetic channel internal walls of which have a dielectric constant higher than the polar liquid has.

The said liquid may be ionized by high-voltage discharges or with the help of a disc made of diamagnetic material rotating inside the channel with the said liquid.

The liquid motion may be stabilized with the help of a hermetic chamber filled with polar liquid, at that, the chamber has electromagnetic windings and is attached to the channel.

If water is used as said liquid, its previous activation may be carried out by adding heavy water (deuterium and tritium).

In the above-mentioned known device of the MHD-generator which contains a toroidal channel with the body made of non-magnetic material inside of which there is a dielectric ~~cover~~ coating and electromagnetic system with windings, the novelty is that the channel is made hermetically and filled with polar liquid, and that the dielectric constant of the ~~cover~~ channel's surface is higher than the same of the said liquid.

Water which may contain heavy water (deuterium and tritium) may be used as said liquid.

The MHD-generator may contain a hermetic stabilization chamber which has conjunction with the channel placed outside it in the internal area of tore. ~~As this takes place~~ In such an embodiment, the chamber may be made as a cylinder, ~~axle~~ the axis of which lies in the plane of the middle ~~axle~~ axis of the toroidal channel.

The MHD-generator may contain a liquid ionization device which may be made as electrodes placed inside the channel and attached to a periodic high-voltage source, or as a diamagnetic disc placed inside the channel and ~~cinematically~~ attached to a rotary actuator.

The electromagnetic system may contain power windings and exciting windings which may be placed inside the channel as opposed to outside the toroidal housing.

Ferroelectric material may be used as a ~~cover~~ coating for the channel walls.

~~The inventions are explained by the drawing where Fig.1 shows the overall view of the MHD-generator, Fig. 2 shows its lateral section.~~

~~The best example for carrying out the invention~~

~~The invention is explained by the example of Gritskevich's Dynamo.~~

The ~~hydromagnetic dynamo~~ One embodiment of such a MHD generator contains a hollow ~~seled~~ sealed toroidal body 1 constructed of metal ceramics the internal surfaces of which is covered with layer 2 of a dielectric compound and a cavity is filled with distilled water 3 with ~~adding~~ added heavy water. In the channel of body 1 there are electrodes 4 made of hard-alloy material connected up to capacitor bank, as well as exciting windings 5 connected up to a power source. Inside the ring of body 1 there is assembled cylindrical stabilization chamber 6 made of metal ceramics being communication with the channel of body 1. The internal surface of chamber 6 is also covered with layer 7 of ~~synergetic~~ dielectric coating and the cavity is filled with distilled water 8 with ~~adding~~ added heavy water. Body 1 and chamber 6 have power windings 9 and 10 on the outside.

The ~~hydromagnetic dynamo~~ MHD generator operates as follows: partially ionized water 3 (~~at the expense~~ with the addition of heavy water) is ionized additionally at ~~the expense of~~ by high-voltage discharges ~~by~~ from electrodes 4. A traveling magnetic field is created with the help of windings 6 which creates water motion 3 in one direction in the channel of body 1. Electromotive force develops in windings 9 at the expense of electromagnetic induction. As a result of water flow motion free electrons appear and additional energy releases at the expense of friction of water 3 on layer 2 and electrostatic breakdowns of cavitational-and-vacuum structures and the existing reaction of cold nuclear fusion. ~~At~~ As this takes place, the quantity of electric energy produced on windings 9 ~~may be~~ is sometimes greater than the energy spent on ionization and acceleration of water by electrodes 4 and windings 5. At that, the proposed device and method do not contradict the energy conservation law because the excess energy (in respect to input energy) releases from water 3 and internal layer 2 which should be replaced with time. Stabilization of liquid motion 3 is created at the expense of interaction of (e) discharges in it with discharges in chamber 6. In doing so, electric energy may be also collected from windings 10.

Abstract

~~The invention is directed at increasing output, reliability and environmental safety of MHD generators as well as at simplifying the design of said generators. The inventive method for the production of energy comprises the following steps: a polar liquid (8) is circulated in predetermined direction along a hermetically sealed toroidal channel (1) by means of a traveling magnetic field, and electric power is collected by means of electromagnetic winding. The liquid is ionized at least at the stage of launching, by means of electrodes (4), for example. The internal walls (2) of the channel have a dielectric constant which is higher than the dielectric constant of said liquid.~~ An improved toroidal field coil magnetohydrodynamic generator which uses ionized polar operating fluids and various internal coatings to maximize electrical output. The generator offers improved efficiency and safer operation compared to previous MHD generators due to its combination of existing research in bubble cavitation, sealed construction, and non-toxic operating fluids, as well as using the best aspects of conventional MHD design.